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Allergies, Asthma and Building Housekeeping
Health Effects

Allergies - In its simplest form, allergy is the response of the immune system of an organism, to something that it recognizes as a threat. The object of an allergic response is to protect the organism. The immune system chemically identifies threats based upon proteins. The ability to respond allergically is usually inherited. Approximately forty percent of the population in this country can become allergic. The other sixty-percent will not experience allergies. The most common method of dealing with allergies is to eliminate the possibility of contact with the offending materials (allergy producing proteins/allergen[s]). Alternatively, people can be desensitized to many allergens. Medical treatment is another way to help people with allergies using various medicines such as antihistamines.

Asthma - Attacks of bronchial asthma are usually brought on by breathing in a specific allergen. Asthma is a specific form of allergy and is chronic. Symptoms are more severe and there is often a characteristic "wheezing". It is frequently caused by the inhalation of airborne allergens such as pollen, spores, feathers, and animal dander.   This also includes the presence of various allergens in dust. Medical management is often similar to that of allergies although it is usually more aggressive and done on a regular or routine basis.

Irritating Effects - Eye, nose and respiratory irritation that are not permanent can occur and even be recurrent when the materials themselves by their very nature have an irritating effect. These effects are more common to chemicals (especially cleaning chemicals such as Ammonia and Bleach).

Potential Sources of Problems

Plants and Mold - Plants are often pleasant additions to trouble free indoor environments. However, they can be sources or vehicles for contamination by molds and insects, that view them as a home, or, as food. Their presence in a building or and area that is experiencing air quality problems can be confusing and confounding. Too much water, or fertilizer, or too little of either can cause their own difficulties for both the plants and the environment. Often they can be a source of water, which leads to the amplification of mold in the building. This Agency has guidelines for dealing with mold and mildew in buildings (DOS bulletins 378 and 393). Where it is clear that this problem may be attributable to plants, the simple and most direct solution is to remove the plants.

Dust Mites - Dust mites are microscopic insects that live in the environmental dust and fabrics that are found in occupied spaces. The mites live in the fabric of carpet, chairs, drapes and sound suppression and privacy panels. They live on (eat) the shed epidermal (skin) cells that are continually being shed by our bodies, animal dander, insects and insect parts and such other protein containing materials that they may come upon. They also produce fecal pellets, which can become part of the dust. There have been seventeen separate allergens identified in the fecal pellets of the common Dust Mite.

Food and Vermin - Food, food products and food wastes are attractants for such environmental pests as rodents, roaches and other insects and their larva. The impact of these pests upon air quality is not usually related to their presence directly. Rather, it is due to their biological activities in their production of waste, and, the fact that these waste products can become part of the environmental dust. Disturbed and distributed into the ambient air, this can have an impact on air quality and our reaction to it.

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Garbage - Food, garbage and trash in waste cans should be kept to a minimum and taken out each night.

Summary - All living things and their products decay, dry out and deteriorate into the environmental dust. The amount that they contribute to the dust is in direct proportion to the failure of efforts to maintain environmental cleanliness. Mice and other pests will often produce liquid waste in the process of excreting fecal pellets. We will see the droppings but the liquid evaporates leaving a protein residue, which becomes part of the dust. Roaches produce protein containing liquid waste and scent chemicals (pheromones). This also dries up and becomes part of the dust. Recent studies have implicated the liquid waste of roaches in the increase of inhaler use by inner city school children.

All of these protein sources, that can be and are part of the normal environmental dust, are the result of human activity and, our interaction with the "critters" that live around us and because of us. Usually they are harmless. However, people can become allergic to some or all of these proteins in the dust. This is why, eliminating, limiting and/or controlling the environmental dust is so important in the management of people who have allergies and asthma. As in most issues related to the human response to chemicals, "the poison is in the dose". We can usually limit exposure, but rarely can we eliminate it in its entirety.

Control Measures

Pest Control - **Modern contracts for pest management call for integrated pest control. Chemical agents should not be placed in an environment unless there is evidence of pest activity. Glue boards can also be used to demonstrate the presence or absence of pests. Chemical baits and sprays are then used in areas and at times of pest activity. The application of pest control material is usually done at a time when contact with pests can be expected to be maximized, while contact with human occupants will be minimized. All application work should be done at the end of the last work shift, or during the period of lowest activity in a 24/7 operation.**

Dusting - Dusting should be performed at least once a month on all office furnishings. Furnishings include desktops, file cabinets, book -cases, lights, and HVAC grilles.

Floors - Floors, and other non-porous flooring, should be cleaned at least once a day. Floors should be cleaned during non-occupied hours to minimize dust exposure. Vacuuming and wet mopping are preferable to sweeping. Vacuuming should be performed with a modern, high efficiency type of vacuum cleaner.

Carpeting - For areas that are occupied and heavily trafficked, carpets should be vacuumed at the end of each day. Steam cleaning via a steam extraction method should be performed whenever the carpets are visibly dirty. This should be done at least twice a year. If (when) carpets are worn and have exceeded their useful life, both the carpets and the padding should be removed and replaced. Carpets and carpet backing should be kept as dry as possible to prevent microbial growth. It may be prudent to avoid steam-cleaning carpets during humid weather, and, without running the ventilation system. Carpets, that are repeatedly wet, should be removed. Non-porous flooring such as tile should be investigated as replacement in these cases.

General Building Maintenance - Custodial activities should be performed when building occupancy is at its lowest level. This is to prevent occupants from being exposed to potentially irritating custodial chemicals and airborne dust. Building maintenance services in the public sector should have an active Right-To-Know program. Building maintenance services in the private sector should have an active HazCom program. These programs should include maintaining all MSDS's on site for any custodial chemicals, active review of all MSDSs and a policy of substitution of less toxic materials where and whenever possible.